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TOOLING BY

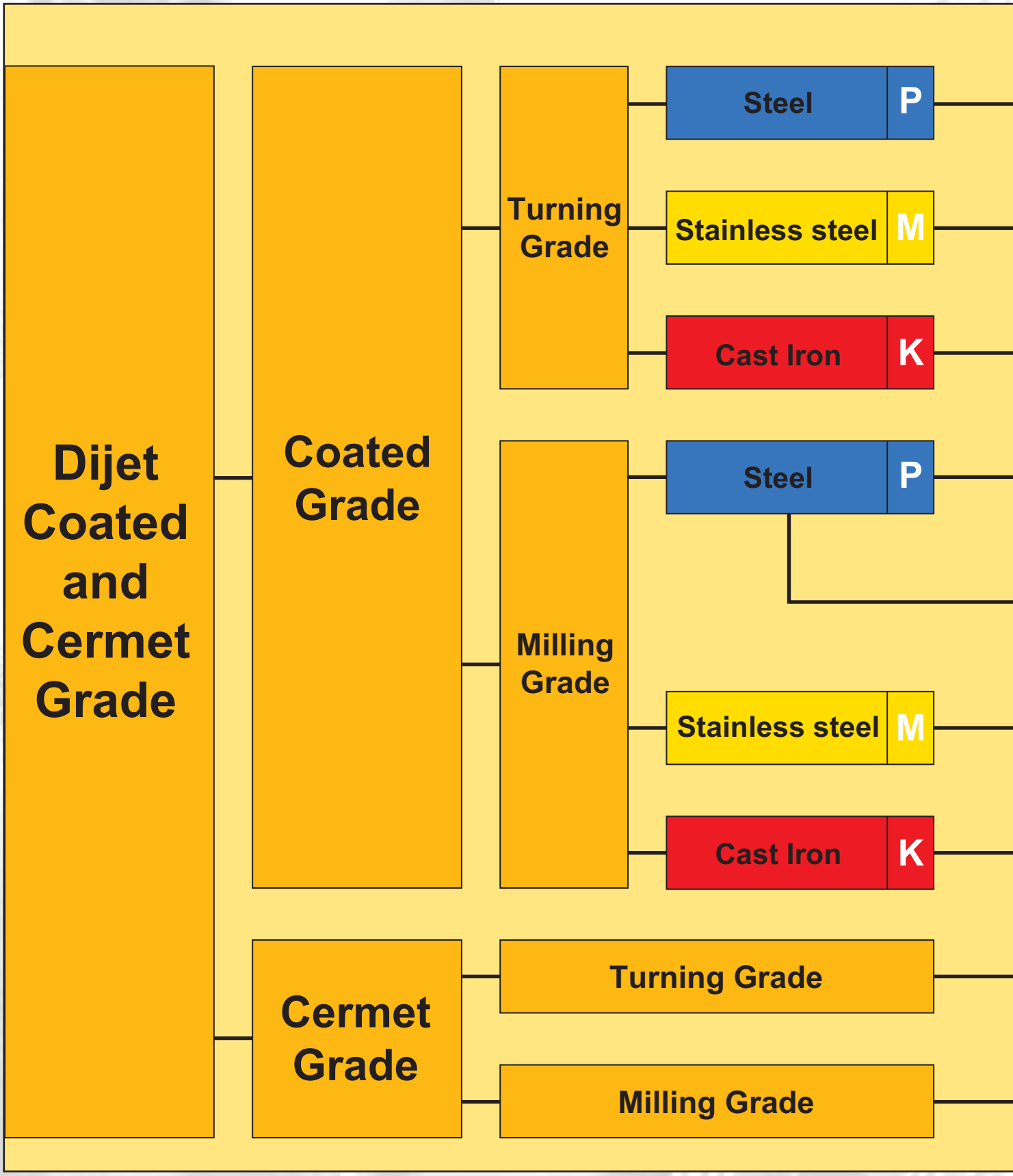
DIJET®

" Technical Information "

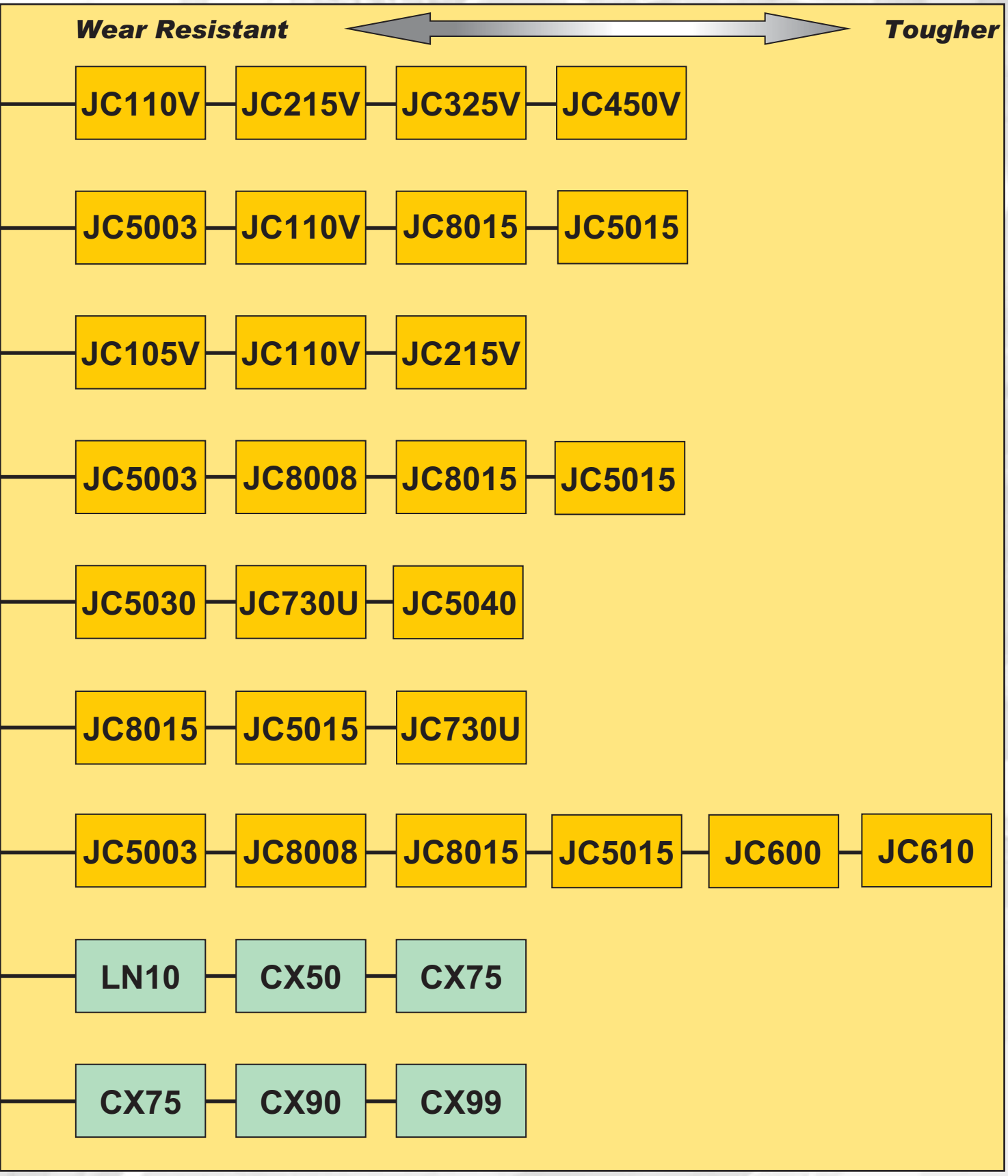
" Technical Information "

" Technical Information "

■ DIJET COATED and CERMET GRADE.

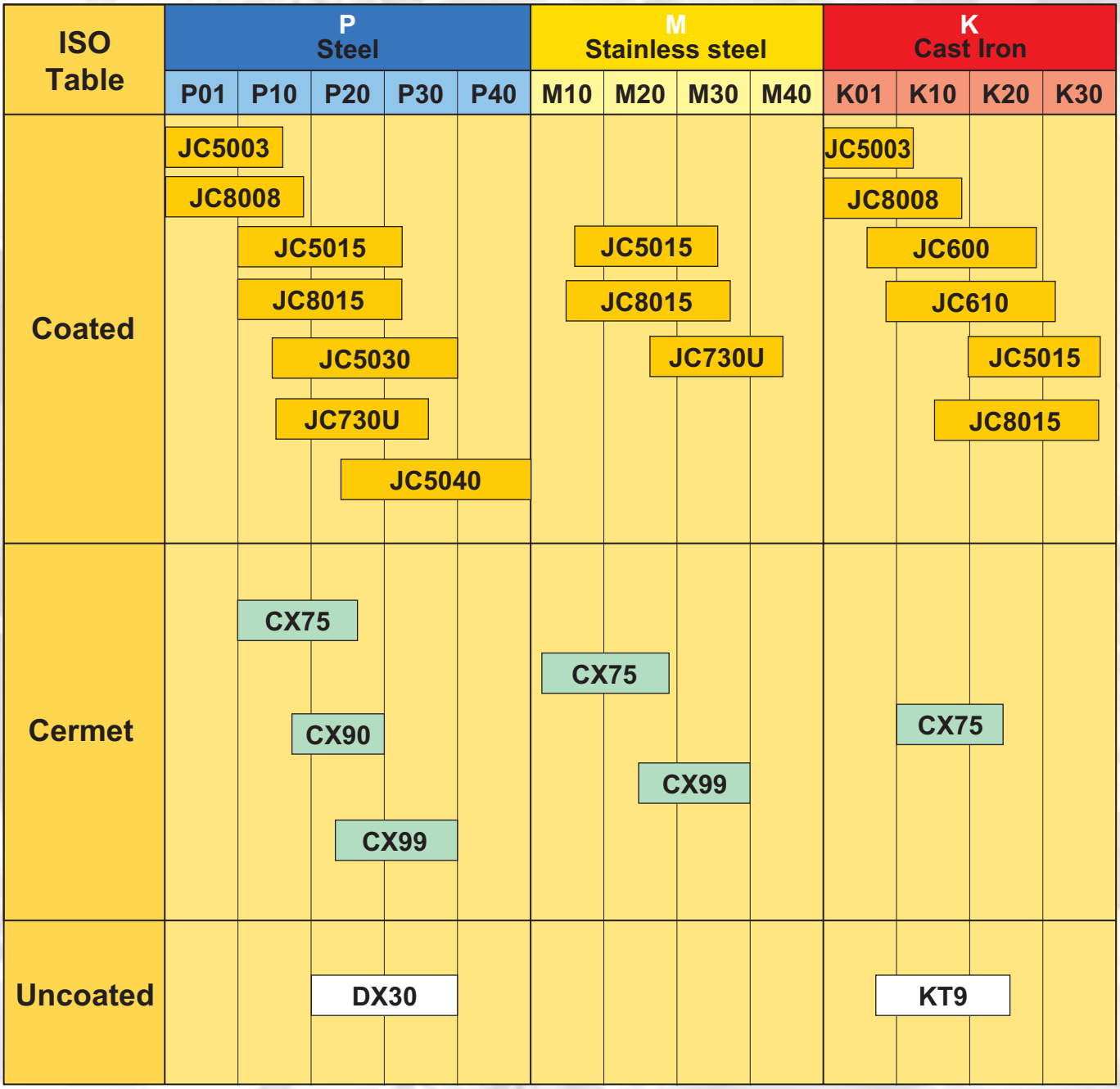


" Technical Information "



“ Technical Information ”

■ DIJET ISO MILLING TABLE.



Grade colour correspond at box colour

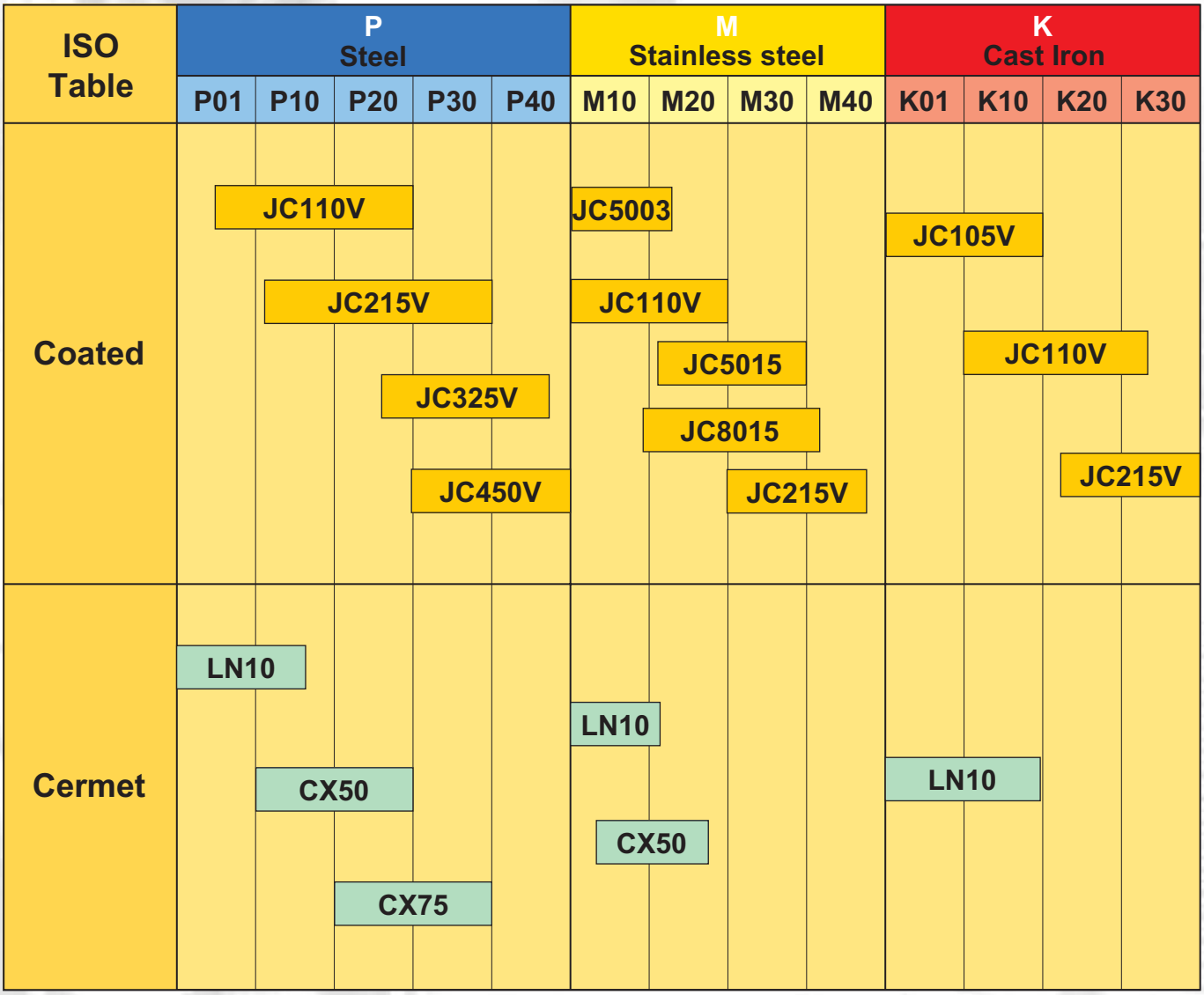
■ Grade Selection Guide

	JC8008 JC 5003	JC8015 JC5015	JC5030	JC730U	JC5040	JC 600 JC610	DX30	KT9
Carbon/Alloy steel	😐	😐	☺	☺	☺		☺	
Die steel	😐		☺		☺		☺	
Hardened	☺	☺	☹				☹	
Stainless steel	😐	☺	😐	😐	☹			😐
Gray cast iron	😐	😐	😐		😐	☺		☺
Ductile cast iron	😐	😐	😐		😐	☺		☺

☺ = Very Good 😐 = OK ☹ = Not recommended

" Technical Information "

DIJET ISO TURNING TABLE.



Grade colour correspond at box colour

Grade Selection Guide

		JC105V	JC110V	JC215V	JC325V	JC450V	JC5003	JC8015 JC5015
Carbon steel Alloy steel	Finishing		☺					
	Light cutting		☺	☺	😐			
	Medium cutting		😐	☺	☺	😐		
	Roughing to heavy		😐	😐	☺	☺		
Stainless steel	Finishing						☺	
	Light cutting		☺				😐	☺
	Medium cutting		😐	😐				☺
	Roughing			😐				
Cast iron	Finishing	☺	😐					
	Medium cutting	😐	☺	😐				
	Roughing			☺				

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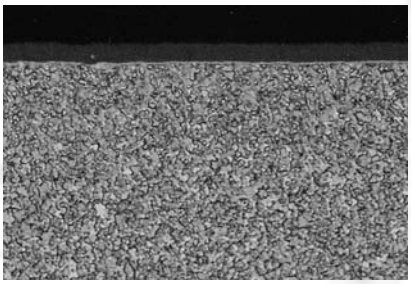
" Technical Information "

DIJET MILLING Coated Grade.

General description

Dijet coated inserts for milling (**DZ coated JC 5000** series) produced by **TiAlN PVD** coating on the surface of special substrate having excellent wear-resistance and chipping-resistance which gives stable cutting performance even in interrupted machining. The series cover wide range of application for indexable milling inserts, end-mills and drills.



Micro structure of **JC5003**

Features & Application

ISO Scale		Grade	Cutting Speed (m/min)	Features
P Steel	Wear resistant ↕ Fracture resistance	JC5003/8008	200~300	Extremely excellent wear-resistance. For high speed cutting and high hardened steel up to 65 HRC.
		NEW JC8015	100~200	Adopted tougher sub-micro grain carbide base material. For general steel, hardened steel and stainless steel.
		JC5015	100~200	Adopted tougher sub-micro grain carbide base material. Extremely suitable for wet cutting on steel stainless steel.
		JC5030	100~200	Adopted P-group substrate having good heat-resiatance. For general steel and die & mold steel.
		JC730U	150~250	New CVD coated grade having excellent wear- resistance & termal crack-resistance. For general steel & stainless steel.
		JC5040	100~200	Adopted M-group substrate having good crack-resiatance. For general steel and die & mold steel.
M Stainless steel	Wear resistant ↕ Fracture resistance	JC5015	100~200	Adopted tougher sub-micro grain carbide base material. For general steel hardened steel and stainless steel.
		NEW JC8015	100~200	Adopted tougher sub-micro grain carbide base material. Extremely suitable for wet cutting on steel stainless steel.
		JC730U	120~220	New CVD coated grade having excellent wear-resistance & termal crack-resistance. For general steel & stainless steel.
K Cast iron	Wear resistant ↕ Fracture resistance	JC5003/8008	200~300	Extremely excellent wear-resistance. For high spped cutting and high hardened steel and cast iron.
		JC600	150~250	CVD coated grade having excellent wear- resistance. For gray cast iron & ductile cast iron at high speed cutting.
		JC610	120~220	CVD coated grade having excellent wear-resistance & crack-resistance. General grade for gray cast iron & ductile cast iron.
		JC5015/8015	100~200	Adopted tougher sub-micro grain carbide base material. Multi grade for hardened steel and stainless steel & cast iron.

Application range

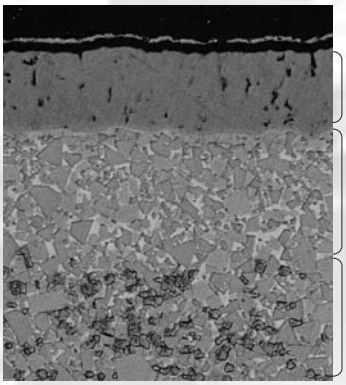
ISO Code	P Steel					M Stainless steel				K Cast Iron			
	P01	P10	P20	P30	P40	M10	M20	M30	M40	K01	K10	K20	K30
Grade	JC5003									JC5003			
	JC8008												
		JC5015				JC730U							
		JC8015									JC610		
		JC5030					JC5015						
			JC730U				JC8015					JC5015	
				JC5040								JC8015	

" Technical Information "

DIJET TURNING Coated Grade.

General description

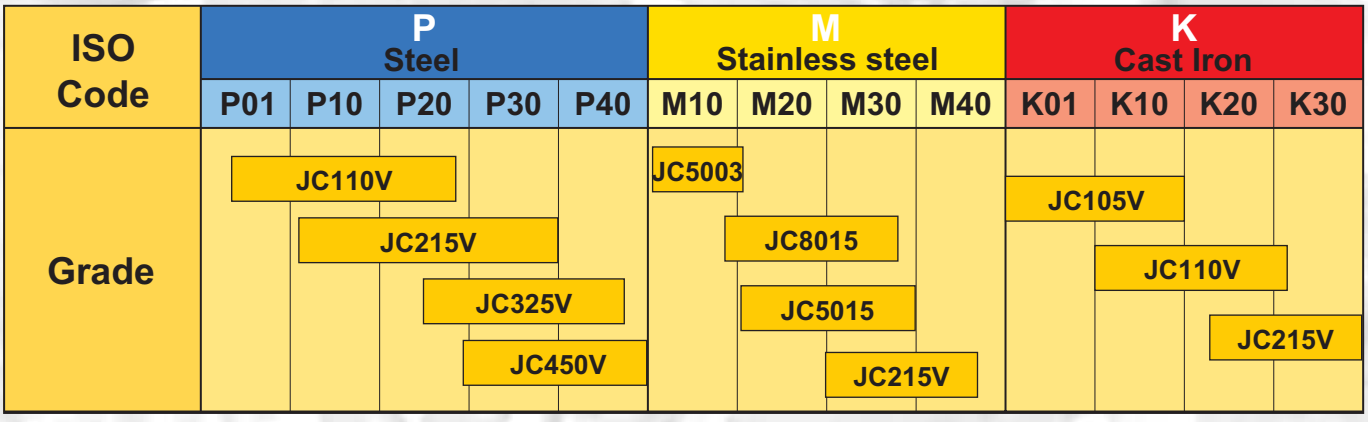
Dijet coated inserts for turning (**JC coated V** series) **CVD** produced by multi-thick layers (12 ÷ 15 μm) coating on the surface of special substrate are remarkably improved of tool life.
The series cover wide range of application from light cutting to heavy duty cutting in high speed or high feed application by combination with the optimum chip-breakers.



Features & Application

ISO Scale		Grade	Cutting Speed (m/min)	Features
P Steel	Wear resistant ↕ Fracture resistance	JC110V	200~300	Excellent wear-resistance & deformation-resistance. Finishing to medium cutting for steel & cast iron.
		JC215V	150~250	Well balanced for wear-resistance & fracture-resistance. General steel grade for light to medium cutting.
		JC325V	100~200	Excellent fracture-resistance. Medium to heavy roughing and interrupted cutting for steel.
		JC450V	100~200	Toughest grade. Heavy roughing & interrupted cutting for steel.
M Stainless steel	Wear resistant ↕ Fracture resistance	JC5003	100~180	Excellent wear-resistance & edge notching. Finishing for stainless steel.
		JC110V	100~200	Excellent wear-resistance & deformation-resistance. Finishing in high speed cutting for stainless steel.
		JC5015/8015	80~150	Excellent edge notching resistance. Light to medium cutting for stainless steel.
K Cast iron	Wear resistant ↕ Fracture resistance	JC105V	150~300	Best wear-resistance grade. Finishing to medium cutting of general cast iron or ductile cast iron. Medium to high speed cutting.
		JC110V	150~300	Excellent wear-resistance grade. Light to medium cutting for gray & ductile cast iron.
		JC215V	100~250	Well balanced for wear-resistance & fracture-resistance. Medium to roughing for cast iron & ductile cast iron.

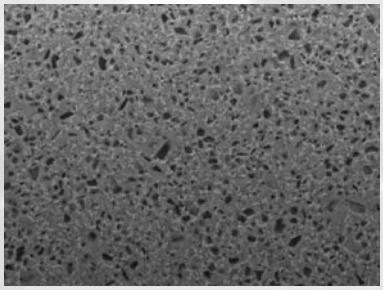
Application range



" Technical Information "

DIJET CERMET Grades.

General description
The main ingredients of cermet are TiC (titanium carbide) TiN (titanium nitride) and TiCN (titanium carbo-nitride). In comparison with WC (tungsten carbide) whose main ingredient are sintered carbide alloy, those carbide composites show strength and anti-oxidization under high temperature and also hard to react upon steel materials therefore, excellent surface finish can be obtained. These characteristics of cermet make it possible for high speed and high efficient cutting application. Dijet newly added CX-series for general purpose application to the conventional series to comply with every cutting conditions.



Micro structure of **CX90**

Features & Application

Applications	Grade	Cutting Speed (m/min)	Features
Turning	LN10	250~350	Less binding materials for higher wear-resistance High speed cutting for steel. Finishing for cast iron.
	CX50	200~300	Surface-hardened type cermet. Wear-resistance and deform-resistance in high speed cutting. High speed cutting for general steel.
	CX75	150~250	High nitrogen content and fine uniform shard structure. Exellent for chipping-resistance & wear-resistance. General purpose for steel.
Milling	CX75	180~230	High nitrogen content and fine uniform shard structure. Exellent for chipping-resistance & wear-resistance. Medium & high speed Milling for steel & alloy.
	CX90	150~200	High nitrogen content and fine uniform shard structure. Exellent for chipping-resistance & wear-resistance. General milling application for steel & alloy steel.
	CX99	100~180	Tougher cermet grade having impact resistance by improving binder materials and microstructure. Roughing application for steel milling.

Note: Above data for recommended cutting speed is relevant for machining normal steels.

Application Range

ISO Scale	P Steel					M Stainless steel				K Cast Iron			
	P01	P10	P20	P30	P40	M10	M20	M30	M40	K01	K10	K20	K30
Turning	LN10					LN10				LN10			
		CX50					CX75						
			CX75										
Milling		CX75				CX75							
		CX90						CX99			CX75		
			CX99										

Grade Selection Guide

		Turning			Milling		
		LN10	CX50	CX75	CX75	CX90	CX99
Carbon steel Alloy steel	Finishing	☺	😐		😐		
	Light cutting	😐	☺	☺	☺	😐	
	Medium cutting		☺	☺	😐	☺	☺
	Roughing to heavy			😐			😐
Stainless steel	Finishing	☺		😐	☺		
	Light cutting			☺	☺		☺
	Medium cutting						😐
Cast iron	Finishing	☺		😐			
	Medium cutting	😐		☺	😐		
	Roughing						

☺ = Very Good 😐 = OK ☹ = Not recommended

“ Technical Information ”

■ Note

" Technical Information "

■ Grade Comparison. (Milling and Turning Grade)

ISO Code		Dijet	Mitsubishi	Toshiba	Sumitomo	Kyocera	Hitachi	Sandvik	Kennametal	Iscar	Seco	Stellram	Walter
P	P 01	JC 110V JC 5003	UE 6005	T 9005 TD 905 T 7005	AC 700G	CR 7015 PR 915	GM 8015 CY 15 CY 10H	GC 4015	KC 910	IC 520 N	TP 05 TX 100	MP 37 NL 25	WAK 10 WAK 15
	P10	JC 110V JC 215V JC 5010	UE 6005 UE 6010 UE 6010 UC 6020	TD 9015 TD 905 TD 915 T 715X	AC 700G AC 2000	CR 7015 PR 915 PR 930	CY 15 CY 25 GM 8015 GM 8020	GC 4015 GC 1025 GC 3115	KC 9010 KC 9110 KC 990 KC 994M KC 5010	IC 520 N IC 9015	TP 15 TP 100 CP 200	MP 37 NL 25 PFZ	WAP 10 WAP 25
	P20	JC 110V JC 215V JC 730U JC 5015 JC 5025 JC 5030	UC 6010 UE 6010 UE 6020 VP 15TF VP 20MF VP 30RT UP 20M F 7030	TD 9015 TD 9025 TD 915 TD 920 TD 7020	AC 2000 AC 230	CA 5025 CR 9025 PR 930 PR 730	GM 8020 GM 20 CY 9020 GM 25 CY 150	GC 4025 LC 25 GC 4020	KC 9125 KC 9025 KC 810 KC 935 KC 8050 KC 725M	IC 520 N IC 9015 IC 908 IC 950	TP 200 T 250M T 25 M T 20M	MP 37 NL 25 PFZ SFZ NL 30 MP 15	WAP 20 WAP 25 WQM 15
	P30	JC 215V JC 325V JC 5015 JC 5025 JC 5030	UE 6035 US 735 VP 15TF VP 20MF UP 20M	T 9025 TD 9035 TD 930 T 725X AH 120 GH 330	AC 3000 ACZ 330	CA 5025 CR 9025 PR 660	GM 8035 GM 25 CY 250 HC 844 CY 9020	GC 2135 GC 4025 GC 4035 GC 4030 GC 4040	KC 935 KC 850 KC 732 KC 9040 KC 5025 KC 792M	IC 9025 IC 4050 IC 908 IC 950	TP 200 T 250M T 25M F 30M CP 300	MP 26 MP 15 NL 30 X 44 PFZ MP 91M	WAP 30 WAP 35 WQM 35 WTP 35
	P40	JC 5040 JC 325V JC 450 V	UE 6035 US 735	T 9035 TD 930 AH 120	AC 3000 AC 304 ACZ 330 ACZ 350	PR 660 PR 730	GX 30 CY 250 HC 844	GC 1020 GC 1120 GC 2145 GC 4040 GC 235	KC 250 KC 720 KC 792M KC 9045	IC 3028 IC 328	TP 40 TP 300 T 60M T 25M	NL 92 X 44 PFZ MP 91M	WAP 30 WAP 35 WTP 35
M	M10	JC 110V	UE 6010 US 7020	TD 915 T 715X	EH 10Z EH 510Z	CA 6015 PR 915	GM 25 GM 8015	GC 2015 GC 1025	KC 732 KC 5010 KC 9010	IC 907	TP 100 CP 200	MP 37 NL 25	WAM 10 WAP25
	M20	JC 215V JC 730U JC 5015 JC 5030	US 7020 UE 6020 VP 15TF VP 20MF UP 20M	T 6020 T 725X GH 330 AH 330	EH 20Z EH 520Z ACZ 330	CA 6015 PR 930 PR 730 PR 660	GM 8035 GM 20 GM 25	GC 2015 GC 2025 GC 4125 GC 1025	KC 935 KC 9225 KC 9025 KC 9125 KC 792M KC 994M	IC 520 M IC 908 IC 928	TP 200 T 250M T 25M F 20M F 30M	MP 37 MP26 NL 25 X 44 X 22	WAM 20 WAM 10 WAP 25 WTP 35
	M30	JC 215V JC 325V JC 5015 JC 5040	US 735 UE 6035 VP 15TF VP 20MF UP 20M	T 6030 AH 120	AC 304	PR 660	GF 30 GM 8035 GX 30 CY 9020	GC 1020 GC 1120 GC 2035 GC 2040	KC 850 KC 9240 KC 9040 KC 725M	IC 520 M IC 3028 IC 908	TP 300 T 250M T 25M F 40M	MP 15 NL 92 X 44 MP 91M X 22	WAM 30 WQM 35 WTP 35 WAP 30
	M40	JC 325V JC 450 V	US 735		AC 3000 ACZ 330		GX 30	GC 2145	KC 9245 KC 9045	IC 3028	TP 40 TP 300	NL 92 X 44 MP 91M	WQM 35 WAP30
K	K01	JC 105V JC 600 JC 610 JC 5003	UC 5005 UC 5015	T 5010 AH 110	AC 300G	CA 4010 PR 510	GM 3005	GC 3005 GC 3015	KC 9315 KC 910 KC 5410	IC 9007 IC 910	TP 05 TX 100	MP 23 MP 37 PFZ	WAK 10 WAK 15
	K10	JC 105V JC 110V JC 605 JC 610 JC 5010	UC 5015 UE 6010 VP 05RT F 5010	T 5010 T5020 AH 110 GH 110 T 1020	AC 700G EH 10Z AC 211	CA 4010 PR 610 PR 510	GM 3005 GM 8015 GM 8020 CY 100H CY 10H	GC 1005 GC 3005 GC 3015 GC 3115	KC 990 KC 950 KC 5010 KC 7310 KC 9010 KC 992M	IC 9007 IC 9015 IC 910 IC 450	TX 150 T 150M F 15M CP 200	MP 23 MP 37 NL 25 HFZ	WAK 10 WTA 13 WAK 15 WQM 15
	K20	JC 110V JC 215V JC 600 JC 610 JC 5015	UE 6010 VP 10RT VP 15TF F 5020	T 5020 AH 120 T 1015 T 1020 AH 120	AC 700G AC 2000 EH 20Z ACZ 310	CA 4010 PR 610	GM 8020 GF 30 CY 9020	GC 1020 GC 1120 GC 3025 GC 3025 GC 4025 K 20W	KC 9120 KC 8050 KC 9325 KC 9025 KC 250 KC 620M CG4	IC 9015 IC 8048 IC 450 IC 908	TX 150 TP 200 T 150M T 250M T 25M CP 200	MP 23 MP 37 NL 25 HFZ SFZ MP 91M	WAK 10 WAP 20 WAK 15 WAP 25 WQM 15
	K30	JC 215V JC 610	VP 15TF F 5020		AC 2000 ACZ 310		GM 25	GC 3040 GC 4125	KC 720	IC 9015 IC 4050	TP 200 T 250M	NL 30 MP 91M	WAP 30 WAP 35

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Hardness Comparison. (Table)

Tensile strength N/mm²	Vickers HV	Brinell HB	Rockwell HRC	Shore "SH"
700	200		-	28
740	210		-	29
770	220		-	30
810	230		19,2	31
840	240		21,2	33
880	250		23,0	34
910	260		24,7	35
950	270		26,1	36
980	280		27,6	37
1020	290		29,0	39
1050	300		30,0	40
1090	310		31,5	41
1120	320		32,9	42
1150	330		33,8	43
1190	340		34,9	44
1230	350		36,0	45
1260	360	359	37,0	46
1300	370	368	38,0	47
1330	380	373	38,9	48
1370	390	385	39,8	49
1400	400	393	40,7	50
1440	410	400	41,5	51
1470	420	407	42,3	52
1510	430	416	43,2	53
1540	440	423	44,0	54
1580	450	429	44,8	55
1610	460	435	45,5	56
1650	470	441	46,3	57
1680	480	450	47,0	58
1720	490	457	47,7	59
1750	500	465	48,3	60
1790	510	474	49,0	61
1820	520	482	49,6	62
1860	530	489	50,3	63
1890	540	496	50,9	64
1930	550	503	51,5	65
1960	560	511	52,1	66
2000	570	520	52,7	67
2030	580	527	53,3	68
2070	590	533	53,8	69
2100	600	533	54,4	70
2140	610	543	54,9	71
2170	620	549	55,4	72
2210	630	555	55,9	73
2240	640	561	56,4	74
2280	650	568	56,9	75
2310	660	574	57,4	75
2350	670	581	57,9	76
2380	680	588	58,7	77
2410	690	595	58,9	78
2450	700	602	59,3	79
2480	710	609	59,8	80
2520	720	616	60,2	81
2550	730	622	60,7	82
2590	740	627	61,3	83
2630	750	633	61,5	83
2660	760	639	61,9	84
2700	770	644	62,3	85
2730	780	650	62,7	86
2770	790	656	63,1	86
2800	800	661	63,5	87
2840	810	666	63,9	87
2870	820	670	64,3	88
2910	830	677	64,6	89
2940	840	682	65,0	89
2980	850	-	65,3	90
3010	860	-	65,7	90
3050	870	-	66,0	91
3080	880	-	66,3	91
3120	890	-	66,6	92
3150	900	-	66,9	92
3190	910	-	67,2	-
3220	920	-	67,5	-
3260	930	-	67,7	-
3290	940	-	68,0	-

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■ *Material Comparison. (Table)*

Structural and constructional steel						
ISO	Germany W.-No.	Germany DIN	Belgium NBN	France AFNOR	Great Britain B.S.	Italy UNI
P	1.0401	C15	-	AF37C12	080A15	C15
	1.0402	C22	C25-1	AF42C20	055M15	C20
	1.0501	C35	C35-1	1C35	080A32	C35
	1.0503	C45	C45-1	1C45	060A47	C45
	1.0535	C55	C55-1	1C55	070M55	C55
	1.0601	C60	C60-1	1C60	060A62	C60
	1.0715	9SMn28	-	S250	230M07	CF6SMn28
	1.0718	9SMnPb28	-	S250Pb	-	CF9SMnPb28
	1.0722	10SPb2035S20	-	10PbF2	-	CF10SPb20
	1.0726	10SPb20	-	35MF6	212M36	-
	1.0736	9SMn36	-	S300	-	CF9SMn36
	1.0737	9SMnPb36	-	S300Pb	-	CF9SMnPb36
	1.1141	Ck15	C16-2	XC12	040A15	C15
	1.1157	40Mn4	-	35M5	150M36	-
	1.1158	C25E	C25-2	2C2 5	-	C25
	1.1167	36Mn5	-	35M5	150M36	-
	1.1170	28Mn6	28Mn6	20M5	-	C28Mn
	1.1183	Cf 35	C36	XC38H1TS	080A35	C36
	1.1191	C45E	C45-2	2C45	080M46	C45
	1.1203	C55E	C55-2	2C55	060A57	C55
	1.1213	Cf53	C53	XC48H1TS	070M55	C53
	1.1221	C60E	C60-2	2C6 0	060A62	C60
	1.1274	Ck101	-	XC100	-	C100
	1.3401	X120Mn12	-	Z120M12	-	GX120Mn12
	1.3505	100 Cr6	-	100 C6	2S135	100Cr6
	1.5415	16Mo3	16Mo3	15D3	1503-243B	16Mo3
	1.5423	16Mo5	16Mo5	-	-	16Mo5KG
	1.5622	14Ni6	18Ni 6	16N6	-	14Ni 6KG
	1.5662	X8Ni9	10Ni 36	9Ni490	1501-510	X10Ni 9
	1.5680	X12Ni5	12Ni 20	Z18N5	-	-
	1.5752	14NiCr14	13NiCr12	12NC1 5	655H13	-
	1.6511	36CrNiMo4	-	36CrNiMo4	817M37	38NiCrMo4
	1.6523	21NiCrMo2	-	20NCD2	805 H20	20NiCrMo2
	1.6546	40NiCrMo2-2	40NiCrMo2	40NCD2	3111-Type7	40NiCrMo2
	1.6582	34CrNiMo6	35CrNiMo6	34CrNiMo8	816M40	35NiCrMo6KB
	1.6587	17CrNiMo6	17CrNiMo7	18NCD6	-	-
	1.6657	14NiCrMo13-4	14NiCrMo13	16NCD13	832 H13	15NiCrMo13
	1.7015	15Cr3	15Cr2	12C3	523M15	-
	1.7033	34Cr4	34Cr4	32C4	530A32	34Cr4
	1.7035	41Cr4	41Cr4	41Cr4	530A40	41Cr4
	1.7045	42Cr4	-	42C4TS	530A40	41Cr4
	1.7131	16MnCr5	16MnCr5	16MC4	527M17	16MnCr5
	1.7176	55Cr3	55Cr3	55C3	525A58	55Cr3
	1.7218	25CrMo4	25CrMo4	25CD4	708A25	25CrMo4
	1.7220	34CrMo4	34CrMo4	34CrMo4	708A37	34CrMo4KB
	1.7223	41CrMo4	41CrMo4	42CD4TS	708M40	41CrMo4
	1.7225	42CrMo4	42CrMo4	42CD4	708A42	38CrMo4KB
	1.7262	15CrMo5	-	12CD4	-	-
	1.7335	13CrMo4-5	14CrMo45	15CD3,5	620-440	14CrMo3
	1.7361	32CrMo12	32CrMo12	30CD12	722M24	32CrMo12
	1.7380	10CrMo9-10	-	12CD9.10	1501-622-515	12CrMo910
	1.7715	14MoV6-3	13MoCrV6	-	1503-660-460	-
	1.8159	51CrV4	50CrV4	50CV4	735A51	50CrV4
	1.8509	41CrAlMo7	41CrAlMo7	40CAD6.12	905M39	41CrAlMo7
	1.8523	39CrMoV13-9	39CrMoV13	-	897M39	-

" Technical Information "

■ *Material Comparison. (Table)*

Structural and constructional steel					
ISO	Japan JIS	Sweden SS	Russia GOST	Spain UNE	U.S.A. AISI/SAE/ASTM
P	S15C	1350		F.111	M1015
	S20C	1450	20	1C22	M1020
	S35C	1572	35	F.113	1035
	S45C	1672	45	F.114	1045
	S55C	1655	55	-	1055
	S58C	-	60	-	1060
	SUM22	1912		F.2111-11SMn28	1213
	SUM22L	1914	-	F.2112-11SMnPb28	12L13
	-	-	-	F.2122-10SPb20	11L08
	-	1957	-	F.210G	1140
	SUM25	-	-	F.2113-12SMn35	1215
	-	1926	-	F.2114-12SMnPb35	12L14
	S15	1370	15	F.1110-C15k	1015
	-	-	40G	-	1035
	S25C	-	25	F.1120-C25k	1025
	SMn438	2120	35G2	F.1203-36Mn6	1335
	SCMn1	-	30G	28Mn6	1330
	S35C	1572	35	-	1035
	S45C	1672	45	F.1140 -C45 k	1045
	S55C	1655	55	F.1150 -C55 k	1055
	S50C	1674	50	-	1050
	S58C	1665	60	-	1060
	SUP4	1870	-	-	1095
	SCMnH1	2183	110G13L	F.8251-AM-X120Mn12	A128
	SUJ2	2258	SchCh15	F.1310-10 0Cr6	52100
	-	2912	-	F.2601-16Mo3	A204Gr.A
	SB450M	-	-	F.2602-16Mo5	4520
	-	-	-	F.2641-15 Ni6	A350-LF5
	SL9N53	-	-	F.2645-X8Ni09	A353
	-	-	-	-	2515
	SNC815	-	-	-	3310
	-	-	40ChN2MA	F.1280-35 NiCrMo4	4340
	SNCM220	2506	-	F.1522-20 NiCrMo2	8620
	SNCM240	-	38ChGNM	F.1204-40 NiCrMo2	8740
	SNCM447	2541	38Ch2N2MA	F.1272-40 NiCrMo7	4337
	-	-	-	F.1560-14 NiCrMo13	-
	-	-	-	F.1560-14 NiCrMo13	9310
	SCr415	-	15Ch	-	5015
	SCr430	-	35Ch	F.8221-35Cr4	5132
	SCr440	-	40Ch	F.1211-41Cr4DF	5140
	SCr440	2245	40Ch	F.1202-42Cr4	5140
	-	2173	18ChG	F.1516-16MnCr5	5115
	SUP9	2253	50ChGA	F.1431-55Cr3	5155
	SCM420	2225	20ChM	F.8372-AM26CrMo4	4130
	SCM432	2234	AS38ChGM	F.8331-AM34CrMo4	4135
	SCM440	2244	40ChFA	F.8332-AM42CrMo4	4140
	SCM440	2244	-	F.8332-AM42CrMo4	4140
	SCM415	-	-	F.1551-12 CrMo4	-
	SFVA12	2216	12ChM	F.2613-14 CrMo45	A182-F11
	-	2240	-	F.124.A	-
	SFVAF22A	2218	12Ch8	TU.H	A182-F22
	-	-	-	F.2621-13MoCrV6	-
	SUP10	2230	50ChGFA	F.1430-51CrV4	6145
	SACM645	2940	38ChMJuA	F.1740-41CrAlMo7	A355CI.A
	-	-	-	-	-

" Technical Information "

■ *Material Comparison. (Table)*

Tool steel and heat resisting steel						
ISO	Germany W.-No.	Germany DIN	Belgium NBN	France AFNOR	Great Britain B.S.	Italy UNI
P	1.1545	C105W1	-	C105E2U	-	C100KU
	1.1663	C125W	-	C120E3U	-	C120KU
	1.2067	102Cr6	-	100Cr6	-	-
	1.2060	X210Cr12	-	X200Cr12	BD3	X205Cr12KU
	1.2344	X40CrMoV5-1	-	X40CrMoV5	BH13	X40CrMoV511KU
	1.2363	X100CrMoV5-1	-	X100CrMoV5	BA2	X100CrMoV51KU
	1.2419	105WCr6	-	105WCr5	-	107WCr5KU
	1.2436	X210CrW12	-	X210CrW12-1	-	X210CrW121KU
	1.2542	45WCrV17	-	45WCrV8	BS1	45WCrV8KU
	1.2581	X30WCrV9-3	-	X30WCrV9	-	X30WCrV93KU
	1.2601	X165CrMoV12	-	-	-	X165CrMoW12KU
	1.2713	55NiCrMoV6	-	55NiCrMoV7	BH224/5	-
	1.2833	100V1	-	C105E2UV1	BW2	102V2KU
	1.3243	S6-5-2-5	-	Z85WDKCV06	BM35	HS6-5-2-5
	1.3255	S18-1-2-5	-	HS18-1-1-5	BT4	HS18-1-1-5
	1.3343	S6-5-2	-	HS6-5-2	BM2	HS6-5-2
	1.3348	S2-9-2	-	HS2-9-2	-	HS2-9-2
	1.3355	S18-0-1	-	HS18-0-1	BT1	HS18-0-1
	1.4000	X6Cr13	-	Z8C12	403S17	X6Cr13
	1.4001	X7Cr14	-	Z8C13FF	403S17	X6Cr13
	1.4006	X12Cr13	-	Z10C13	410S21	X12Cr13
	1.4016	X6Cr17	-	Z8C17	430S17	X8Cr17
	1.4027	GX20Cr14	-	Z20C13M	ANC1B	-
	1.4034	X46Cr13	-	Z44C14	-	X40Cr14
	1.4057	X20CrNi172	-	Z15CN16-02	431S29	X16CrNi 16
	1.4104	X12CrMoS17	-	Z13CF17	-	X10CrS17
	1.4113	X6CrMo17-1	-	-	434S17	X8CrMo17
	1.4313	X4CrNi134	-	Z4CND13.4M	425C11	GX6CrNi1304
	1.4408	GX5CrNiMo19-11	-	-	316C16	-
	1.4718	X45CrSi9-3	-	Z45CS9	401S45	X45CrSi8
	1.4724	X10CrAl13	-	Z13C13	-	X10CrAl12
	1.4742	X10CrAl18	-	Z12CAS18	-	-
	1.4747	X80CrNiSi20	-	Z80CNS20-02	443S65	X80CrSiNi20
	1.4762	X10CrAl24	-	Z12CAS25	-	-

" Technical Information "

■ *Material Comparison. (Table)*

Tool steel and heat resisting steel					
ISO	Japan JIS	Sweden SS	Russia GOST	Spain UNE	U.S.A. AISI/SAE/ASTM
P	SK3	1880	U10A-1	F.515	W110
	SK2	-	U13-1	F.5123-C120	W112
	SUJ2	-	Ch	F.5230-100Cr6	L1
	SKD1	-	Ch12	F.5212-X210 Cr12	D3
	SKD61	2242	4Ch5MF1S	F.5318-X40CrMoV5	H13
	SKD12	2260	-	F.5227 -X100CrMoV5	A2
	SKD2	2140	-	F.5233 -105WCr5	-
	-	2312	-	F.5213-X210CrW12	-
	-	2710	5ChW2SF	F.5241-45WCrSi8	S1
	SKD5	-	3Ch2W8F	F.5323-X30 WCrV9	H21
	-	-	-	F.5211-X160CrMoV12	-
	SKT4	-	5ChNM	F.520S	L6
	SKS43	-	-	-	W210
	SKH55	2733	R6M5K5	F.5613-6-5-2-5	-
	SKH3	-	-	F.5530-18-1-1-5	T4
	SKH51	2722	R6M5	F.5603-6-5-2	M2
	-	2782	-	F.5607-2-9-2	M7
	SKH2	-	R18	F.5520-18-0-1	T1
	SUS403	2301	08Ch13	F.3110-X6Cr13	403
	SUS410	2301	08Ch13	F.8401-AM-X12Cr13	410S
	SUS410S	2302	12Ch13	F.3401-X10Cr13	410
	SUS430	2320	12Ch17	F.3113-X6Cr17	430
	SCS2	-	20Ch13L	-	-
	-	-	40Ch13	F.3405-X45 Cr13	-
	SUS431	2321	20Ch17N2	F.3427-X19CrNi172	431
	SUS430F	2383	-	F.3117-X10 CrS17	430F
	SUS434	-	-	F.3116-X6CrMo171	434
	SCS5	2384	-	-	-
	SCS14	-	07Ch18N10 G2SM2L	F.8414-AM-X7CrNiMo2010	CF-8M
	SUH1	-	40Ch9S2	F.3220-X4SCrSi09-03	HNV3
	-	-	10Ch13SJu	F.3152-X10CrAl13	-
	SUH21	-	15Ch18SJu	F.3153-X10CrAl18	-
	SUH4	-	-	F.3222-X80CrSiNi20-02	HNV6
	-	-	-	F.3154-X10CrAl24	-

“ Technical Information ”

■ *Material Comparison. (Table)*

Stainless steel						
ISO	Germany		Belgium	France	Great Britain	Italy
	W.-No.	DIN	NBN	AFNOR	B.S.	UNI
M	1.4301	X5CrNi1810	-	Z4Cn 19-10F F	304S11	X5CrNi1810
	1.4305	X10CrNi189	-	Z8CNF1 9-09	303S22	X10CrNi1809
	1.4306	X2CrNi19-11	-	Z1CN18 -12	304S11	X3CrNi1811
	1.4308	GX5CrNi19-10	-	Z6CN18.1 0M	304C15	-
	1.4310	X12CrNi177	-	Z11CN1 7-08	301S21	X12CrNi1707
	1.4311	X2CrNiN18-10	-	Z3CN18 -07Az	304S61	X2CrNiN1811
	1.4401	X5CrNiMo17122	-	Z3CND17-11-01	316S13	X5CrNiMo1712
	1.4429	X2CrNiMoN17-13-3	-	Z3CND17-12Az	316S63	X2CrNiMoN1713
	1.4435	X2CrNiMoN18-14-3	-	Z3CND17-12-03	316S11	X2CrNiMo1713
	1.4438	X2CrNiMo18164	-	Z2CND19-15-04	317S12	X2CrNiMo1816
	1.4460	X4CrNiMoN2752	-	Z5CND-2705Az	-	-
	1.4541	X6Cr NiTi1 8-10	-	Z6CNT18-10	321S31	X6Cr NiTi1811
	1.4550	X6CrNiNb18-10	-	Z6CNNb18-10	347S20	X6CrNiNb1811
	1.4571	X6CrNiMoTi17-12-2	-	Z6CNDT17-12	320S18	X6CrNiMoTi1712
	1.4581	GX5CrNiMoNb181 0	-	Z4CNDNb18.12M	318C17	GX6CrNiMoNb2011
	1.4583	X10CrNiMoNb18-12	-	-	-	X6CrNiMoNb1713
	1.4828	X15CrNiSi20-12	-	Z9CN24-13	309S24	X16CrNi2314
	1.4845	X12CrNi25-21	-	Z8CN25-20	310S16	X6CrNi2521
	1.4864	X12NiCrSi36-16	-	Z20NCS33-16	NA17	-
	1.4865	GX40NiCrSi38-18	-	-	330C11	GX50NiCr3919
	1.4871	X53CrMnNiN21-9	-	Z53CMNS2190Az	349S54	X53CrMnNiN219
	1.4878	X12CrNiTi18-9	-	Z6CNT18-10	321S51	-

Cast Iron						
ISO	Germany		Belgium	France	Great Britain	Italy
	W.-No.	DIN	NBN	AFNOR	B.S.	UNI
K	-	GG10	-	Ft10D	-	G10
	-	GG15	-	Ft15D	Grade150	G15
	-	GG20	-	Ft20D	Grade220	G20
	-	GG25	-	Ft25D	Grade260	G25
	-	GG30	-	Ft30D	Grade300	G30
	-	GG35	-	Ft35D	Grade350	G35
	-	GG40	-	Ft40D	Grade400	-
	-	GGG4 0	-	FGS400-12	420/12	GS400-12
	-	GGG40.3	-	FGS370-17	370/17	GS420/15
	-	GGG50	-	FGS500-7	500/17	GS500/7
	-	GGG60	-	FGS600-3	600/3	GS600/3
	-	GGG70	-	FGS700-2	700/2	GS700/2
	-	GGGNiMn137	-	S-NM137	S-Mn137	-
	-	GGGNiCr202	-	S-NC202	S-NiCr202	-

" Technical Information "

■ *Material Comparison. (Table)*

Stainless steel					
ISO	Japan JIS	Sweden SS	Russia GOST	Spain UNE	U.S.A. AISI/SAE/ASTM
M	SUS304	2332	08Ch18N10	F-3504-X5CrNi1810	304
	SUS303	2346	-	F.3508-X10 CrNiS1809	303
	SCS19	2352	03Ch18N11	F.3503 -X2CrNi1810	304L
	SCS13	2333	07Ch18N9L	-	CF-8
	SUS301	2331	-	F.3517-X12 CrNi177	301
	SUS304LN	2371	-	F.3541-X2CrNiN1810	304LN
	SUS316	2347	-	F.3534-X5CrNiMo17122	316
	-	2375	-	F.3543-X2CrNiMoN17313	316LN
	SUS316L	2353	03Ch17M14M3	F.3533-X2CrNiMo17132	316L
	SUS317L	2367	-	F.3539-X2CrNiMo18164	317L
	SUS329J1	2324	-	F.3309-X8CrNiMo2705	329
	SUS321	2337	06Ch18N10T	F.3523-X6CrNiTi18 10	321
	SUS347	2338	08Ch18N12B	F.3524-X6CrNiNb1810	347
	SUS316Ti	2353	10Ch17N13M2T	F.3535-X6CrNiMoTi17122	316Ti
	SCS22	-	-	-	-
	-	-	-	-	318
	SUH309	-	20Ch20N14S2	F.3312 -X15 CrNiSi2012	309
	SUH310	2361	20Ch23N18	-	310S
	SUH330	-	-	F.3313 -X12 CrNiSi3616	330
	SCH15	-	-	-	-
	SUH35	-	55Ch20G9AN4	F.3217 -X53 CrMn NiN2109	EV8
	SUS321	-	-	-	321

Cast Iron					
ISO	Japan JIS	Sweden SS	Russia GOST	Spain UNE	U.S.A. AISI/SAE/ASTM
K	FC10	0110-00	Sc10	FG10	A48-20B
	FC15	1115-00	Sc15	FG15	A48-25B
	FC20	0120-00	Sc20	FG20	A48-30B
	FC25	1125-00	Sc25	FG25	A48-40B
	FC30	0130-00	Sc30	FG30	A48-45B
	FC35	1135-00	Sc35	FC35	A48-50B
	-	1140-00	Sc40	-	A48-60B
	FCD40	0717-02	VC42-12	-	60-40-18
	-	0777-15	VC42-12	-	-
	FCD50	0727-01	VC50-2	-	65-45-12
	FCD60	0732-03	VC-60-2	-	80-55-06
	FCD70	0737-01	VC-70-2	-	100-70-03
	-	-	-	-	-
	-	-	-	-	A439TypeD-2

“ Technical Information ”

Terminology and Formulas. (for Milling)

D_c = Cutting diameter	mm.	z_c = Effective number of teeth	
a_e = Cutting width (step)	mm.	h_{ex} = Max chip thickness	mm.
a_p = Deep of cut	mm.	h_m = Average chip thickness	mm.
f_n = Feed rate per revolution	mm.	k_{c1} = Specific cutting force (h_{ex} = 1mm)	N/mm²
f_z = Feed rate per tooth	mm.	P_c = Net cutting power	KW.
D_e = Effective cutting diameter	mm.	k_r = Major cutting edge angle	deg.
V_c = Cutting speed	m/min.	V_{co} = Constant for cutting speed	
Q = Metal removal rate	cm³/min.	C_{vc} = Correction factor for cutting speed	
l = Machined length	mm.	n = Spindle speed	rev/min.
V_f = Table feed (feed speed)	mm/min.	n_{mt} = Efficiency	KW
Da_p = Max cutting diameter at specific depth	mm.	m_c = Rise in specific cutting force (k_c) as a function of chip thickness	
z_n = Total number of edges in the tool			

General formulas:

Cutting speed $V_c = \frac{\pi \times D_c \times n}{1000}$ = m/min.

Spindle speed $n = \frac{V_c \times 1000}{\pi \times D_c}$ = rev/min.

Table feed (feed speed) $V_f = f_z \times n \times z_n$ = mm/min.

Feed per tooth $f_z = \frac{V_f}{n \times z_n}$ = mm.

Feed per revolution $f_n = \frac{V_f}{n}$ = mm/rev.

Removal rate $Q = \frac{a_p \times a_e \times V_f}{1000}$ = cm³.

Specific cutting force $k_c = k_{c1} \times h_{nm}^{-mc}$ = mm/min.

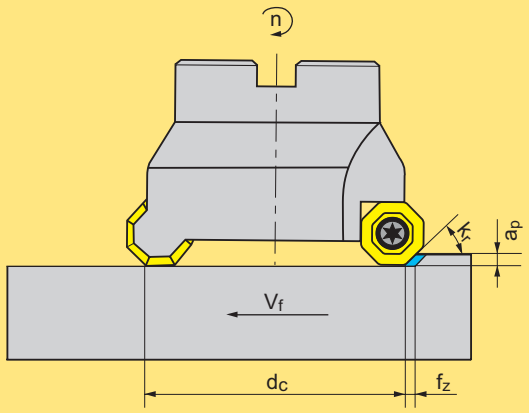
Effective cutting diameter $D_e = 2 \times \sqrt{a_p \times (D_c - a_p)}$ = mm.

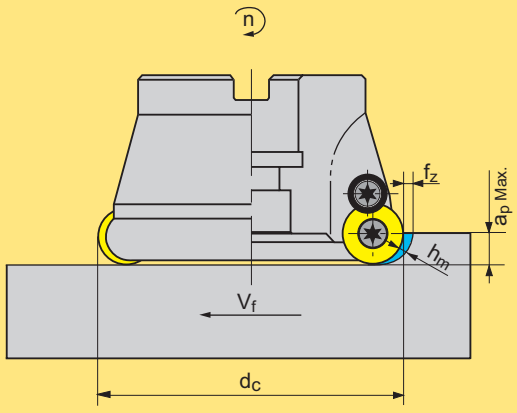
Average chip thickness (side & facemilling) when $a_e / D_c \leq 0.1$ $h_m = f_z \sqrt{\frac{a_e}{D_c}}$ = mm.

Net power $P_c = \frac{a_p \times a_e \times V_f \times k_c}{60 \times 10^6 \times n_{mt}}$ = KW

Average chip thickness when $a_e / D_c \geq 0.1$ $h_m = \frac{\sin k_r \times 180 \times a_e \times f_z}{\pi \times D_c \times \arcsin\left(\frac{a_e}{D_c}\right)}$ = mm.

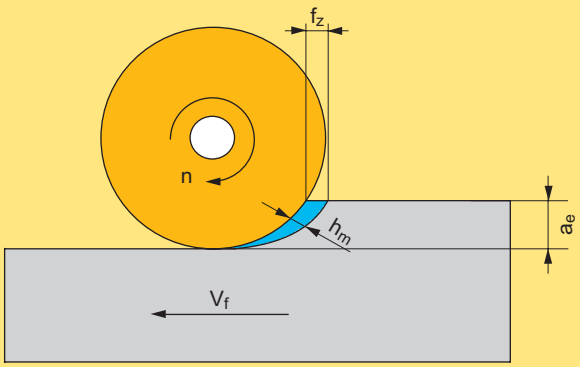
Cutting Time $T_c = \frac{l}{V_f}$ = min.





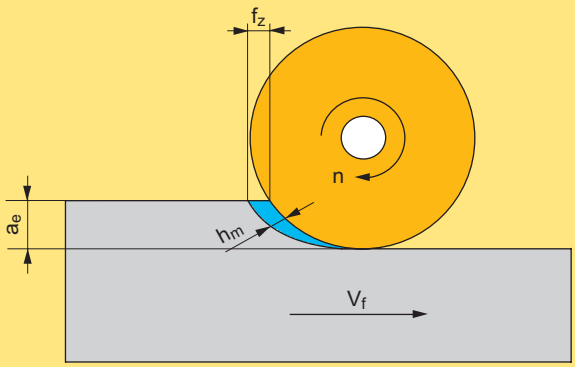
" Technical Information "

Up Cut and down Cut.



Down Milling:
- same workpiece direction, feed rate and rotation of milling cutter.
- chip cross-section start on the strongest point.

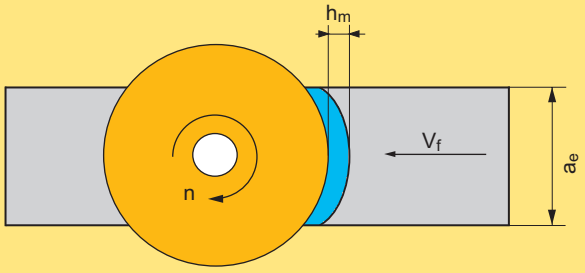
Generally down milling should be prefered if rigid machine is awailable.



Up Milling:
- the feed rate of workpiece is counter-clock-wise to the sense of milling cutter rotation.
- chip cross-section starts on the weakest point.

Up milling should applied on instable milling machine and workpiece materials with higher hardness.

Tool with central work piece.

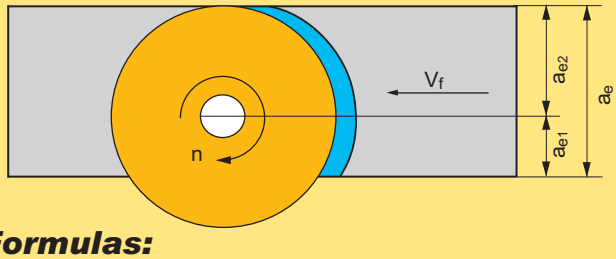


Formulas:

$$h_m = \frac{\sin(k_r) \times 180 \times a_e \times f_z}{\pi \times d_c \times \arcsin\left(\frac{a_e}{d_c}\right)}$$

$$f_z = \frac{h_m \times \pi \times \arcsin\left(\frac{a_e}{d_c}\right)}{\sin(k_r) \times 180 \times a_e}$$

Tool with outside centre work piece.



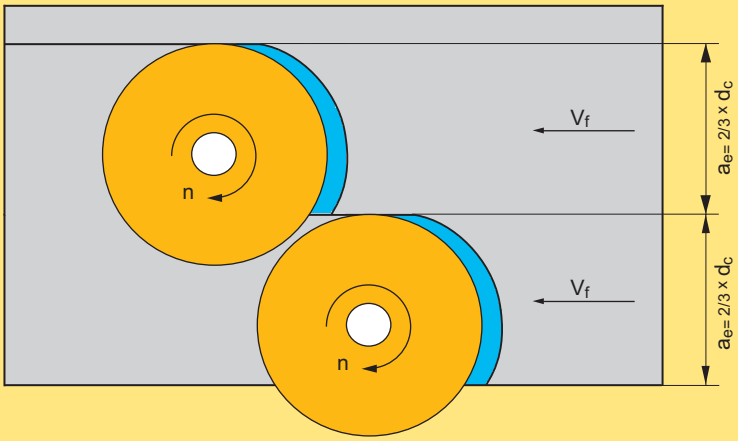
Formulas:

$$h_m = \frac{\sin(k_r) \times 360 \times a_e \times f_z}{\pi \times d_c \times \left[\arcsin\left(\frac{2 \times a_{e1}}{d_c}\right) + \arcsin\left(\frac{2 \times a_{e2}}{d_c}\right)\right]}$$

$$f_z = \frac{h_m \times \pi \times d_c \times \left[\arcsin\left(\frac{2 \times a_{e1}}{d_c}\right) + \arcsin\left(\frac{2 \times a_{e2}}{d_c}\right)\right]}{\sin(k_r) \times 360 \times a_e}$$

Suggest milling operation.

We suggest to work like this when possible or in any case work with tangential tool exit.
Up cut and down cut is possible with Ae Max. 2/3 of tool dia.



“ Technical Information ”

■ *Test Report*

DIJET	FIELD TEST REPORT	No.
	Data: Sign:	

CUSTOMER:		CONTACT:		
OPERATION:		VERTICAL:		HORIZONTAL:
MACHINE:		TYPE OF TAPER:		
COND. MACHINE:		POWER:		
MATERIAL:		STRENGTH Kg/mm²		HARDNESS:
PART. NAME:		WORK PIECE LOCK:		
TOOL HOLDER:		ENGINEER:		

WORK DATA	DIJET	COMPETITOR	WORK PIECE DRAWING OR PICTURE
MAKER: code			
BODY:			
Zn:			
INSERT:			
GRADE:			
CHIP BREAKER:			
DIAMETER: mm.			
Ap / Deep: mm.			
Ae / Step: mm.			
Radial Depth Cut: mm.			
COOLANT:			
Vc: m/min.			
n: min^{-1}.			
Vf: mm/min.			
fn: mm./rev.			
fz: mm./th			
CONTACT TIME: (min.)			
CHIP VOLUME: (cm^3/min)			
WEAR: Rake face			
WEAR: Flank face			

NOTE: